

REMARKS/ARGUMENTS

In the Final Office Action mailed August 11, 2008, claims 1, 3 – 7, and 10 – 18 were rejected. In response, Applicants propose amending claims 1, 7, 10, and 18, canceling claims 6, 17, and 19 – 22, and adding new claim 23. Applicants request that the amendments be entered to put the claims in condition for allowance or to put the claims in better condition for appeal. Additionally, Applicants request reconsideration of the application in view of the proposed amendments and the below-provided remarks.

Response to Claim Rejections

Claims 1 and 3 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes et al. (U.S. Pat. No. 4,184,767, hereinafter Hughes) in view of Schultz (U.S. Pat. No. 6,442,416). Additionally, claims 7 and 10 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hughes in view of Schultz and further in view of Washington (U.S. Pat. No. 6,031,613). However, Applicants respectfully submit that these claims are patentable over the cited prior art for the reasons provided below.

Claim 1

Applicants propose amending claim 1 to incorporate the limitations of claim 6.
As amended claim 6 recites:

“A method for determining the position of an object, comprising:
providing at least two electromagnetic (EM) beams, said at least two EM beams being provided from two different EM sources;
dispersing said at least two EM beams, respectively, into a scanning space by frequency;
retro-reflecting at least a portion of said respective dispersed beams off an object positioned within said scanning space;
determining, in response to frequencies associated with said retro-reflected beams, respective angular positions of said object;
triangulating coordinates of said object using two or more of said respective angular positions;
rotating polarization state of said at least two EM beams; and
rotating polarization state of said retro-reflected beams, such that said at least two EM beams and said retro-reflected beams are treated differently by polarizing beam splitters located in respective paths.” (emphasis added)

The Final Office action cites Hughes col. 4, line 56 – col. 5, line 22 and the polarizing beam splitter (302) of Fig. 5 as teaching the limitations of claim 6. (Final Office action, page 3, item 8) However, Applicants assert that Hughes does not teach the limitations of claim 6 (which are now incorporated into claim 1) as alleged in the Final Office action.

At col. 4, line 56 – col. 5, line 22 and Fig. 5, Hughes teaches details of a laser radiation detection system. In particular, Hughes teaches details of the laser radiation detection system (60) from Fig. 1. As illustrated in Fig. 1 of Hughes, the laser radiation detection system only receives light (40) that is reflected from an object within the spatial scan area of the laser source (10). The laser radiation detection system does not directly receive any of the beams (20) that are emitted from the laser source (10). Because the laser radiation detection system shown in Fig. 5 is a detailed example of the laser radiation detection system of Fig. 1, the laser radiation detection system of Fig. 5 only receives light (40) that is reflected from an object.

Amended claim 1 recites that the polarization state of the EM beams and the polarization state of the retro-reflected beams are both rotated. That is, the polarization state of both the EM beams from the EM sources and the retro-reflected beams are rotated. In contrast to amended claim 1, the polarizer (300) of Hughes (Fig. 5) only polarizes the reflected light (40) that is received at the laser radiation detection system. The laser radiation detection system does not directly receive the beams (20) that are emitted from the light source (10) and therefore does not rotate the polarization state of the beams (20). Because the polarizer (300) of Hughes (Fig. 5) does not rotate the polarization state of both the beams (20) and the reflected light (40), Applicants assert that Hughes does not teach “rotating the polarization state of the EM beams and the retro-reflected beams” as recited in amended claim 1.

Additionally, Applicants assert that the polarizing beam splitter (302) of Hughes (Fig. 5) does not teach that the EM beams and the retro-reflected beams are “treated differently by polarizing beam splitters located in respective paths” as recited in amended claim 1. As stated above, the laser radiation detection system of Fig. 5 only receives reflected light (40). Because the laser radiation detection system of Fig. 5 only receives reflected light (40), the polarizing beam splitter (302) does not teach that the EM beams

and the retro-reflected beams are “treated differently by polarizing beam splitters located in respective paths” as recited in amended claim 1.

Because Hughes does not teach all of the limitations of amended claim 1, Applicants assert that a *prima facie* case of obviousness has not been established.

Claim 7

Applicants propose amending claim 7 to incorporate the limitations of claim 17 into claim 7. The Final Office action cites the polarizing beam splitter (302) of Hughes as teaching the partially reflective surfaces of claim 17 (now incorporated into amended claim 7).

At col. 4, line 56 – col. 5, line 22 and Fig. 5, Hughes teaches details of a laser radiation detection system. In particular, Hughes teaches details of the laser radiation detection system (60) from Fig. 1. As illustrated in Fig. 1 of Hughes, the laser radiation detection system only receives light (40) that is reflected from an object within the spatial scan area of the laser source (10). The laser radiation detection system does not directly receive any of the beams (20) that are emitted from the laser source (10). Because the laser radiation detection system shown in Fig. 5 is a detailed example of the laser radiation detection system of Fig. 1, the laser radiation detection system of Fig. 5 only receives light (40) that is reflected from an object.

Amended claim 7 recites that the partially reflective surfaces act on the EM beams and on the retro-reflected beams. Because the laser radiation detection system of Fig. 5 only receives reflected light (40), the polarizing beam splitter (302) of Hughes (Fig. 5) does not act on the EM beams and on the retro-reflected beams as recited in amended claim 7. Rather, the polarizing beam splitter (302) of Hughes acts only on the reflected light (40) that is received at the laser radiation detection system.

Because Hughes does not teach all of the limitations of amended claim 7, Applicants assert that a *prima facie* case of obviousness has not been established.

Claim 18

The Final Office action cites Hughes cols. 5 – 6 and the polarizing beam splitters (401, 402, and 403) and the retarders (404, 405, and 406) of Fig. 6 as teaching the

limitations of claim 18. At col. 5, line 54 – col. 6, line 17, and Fig. 6, Hughes teaches details of a laser radiation detection system. In particular, Hughes teaches details of the laser radiation detection system (60) from Fig. 1. As illustrated in Fig. 1 of Hughes, the laser radiation detection system only receives light (40) that is reflected from an object within the spatial scan area of the laser source (10). The laser radiation detection system does not directly receive any of the beams (20) that are emitted from the laser source (10). Because the laser radiation detection system shown in Fig. 6 is a detailed example of the laser radiation detection system of Fig. 1, the laser radiation detection system of Fig. 6 only receives light that is reflected from an object.

Claim 18 recites that the polarizing beam splitters “reflect said respective EM beams” and “pass said respective retro-reflected beams.” As stated above, the polarizing beam splitters (401, 402, and 403) of Hughes (Fig. 6) are located within the laser radiation detection system and because the polarizing beam splitters are located within the laser radiation detection system, the polarizing beam splitters (401, 402, and 403) do not act on the beams (20) but only on the reflected light (40). While Hughes teaches polarizing beam splitters that act on the reflected light (40), Hughes does not teach polarizing beam splitters that act on the EM beans as recited in claim 18.

Claim 18 also recites that the polarization state rotators rotate the polarization state of the EM beams and the retro-reflected beams. Because the polarization state rotators (404, 405, and 406) of Hughes (Fig. 6) are also located within the laser radiation detection system, the polarization state rotators do not act on the beams (20) but only on the reflected light (40).

Because Hughes does not teach all of the limitations of amended claim 18, Applicants assert that a *prima facie* case of obviousness has not been established.

Claim 10

Claim 10 has been amended to particularly point out that an elliptical EM beam is an EM beam that has an elliptical shaped beam spot. Support for this amendment is found in Applicants’ specification at, for example, paragraphs [0036] – [0038] and Fig. 4.

While Hughes teaches elliptically polarized light with reference to Fig. 4, Hughes does not teach EM beams with elliptical shaped beam spots that help to improve the

tracking range along a direction orthogonal to the scanning space as recited in amended claim 10.

Dependent Claims 3 – 5 and 10 – 16

Claims 3 – 5 are dependent on claim 1 and claims 10 – 16 are dependent on claim 7. Applicants respectfully assert that claims 3 – 5 and 10 – 16 are allowable at least based on allowable base claims.

New Claim 23

New claim 23 includes limitations similar to claim 7 (as previously presented) and claim 10 (as currently amended). While Hughes teaches elliptically polarized light with reference to Fig. 4, Hughes does not teach EM beams with elliptical shaped beam spots that helps to improve the tracking range along a direction orthogonal to the scanning space as recited in new claim 23.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-3718** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-3718** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,
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